

## **Historic, Archive Document**

Do not assume content reflects current scientific knowledge, policies, or practices.



aS622.S6

September

1983

Volume 4, Number 6

# **Soil and Water Conservation News**

LIBRARY  
File Code \_\_\_\_\_

United States Department of Agriculture  
Soil Conservation Service



*Soil and Water Conservation News* is the official magazine of the Soil Conservation Service. The Secretary of Agriculture has determined that publication of this periodical is necessary in the transaction of public business required by law of this Department. Use of funds for printing *Soil and Water Conservation News* has been approved by the Director of the Office of Management and Budget through January 31, 1987. *Soil and Water Conservation News* (ISSN-0199-9060) is published 12 times a year. Postage paid at Washington, D.C.

Magazine inquiries  
Send inquiries to: The Editor, *Soil and Water Conservation News*, Public Information Staff, Soil Conservation Service, U.S. Department of Agriculture, P.O. Box 2890, Washington, D.C. 20013.

Subscriptions  
Send subscription orders to:  
Superintendent of Documents  
U.S. Government Printing Office  
Washington, D.C. 20402

---

## Comments:

*From the  
SCS Chief*

---

### SCS/ASCS: In Partnership to Protect Resources

Today, more than ever, the Soil Conservation Service (SCS) and the Agricultural Stabilization and Conservation Service (ASCS) are working together as a team to get more soil and water conservation applied.

We are long-time partners in the Agricultural Conservation Program (ACP), with ASCS providing cost-sharing assistance and SCS furnishing technical assistance. Our two agencies also are working as a team to:

- Target assistance to areas where the need is greatest;
- Collect data and store, retrieve, and analyze it using the Conservation Reporting and Evaluation System;
- Evaluate conservation use acreage in PIK and other programs;
- Carry out special ACP and water quality projects;
- Conduct variable ACP cost-sharing pilot programs; and
- Sponsor conservation tillage events and field days and cost-share demonstration plots.

We also share office space in many places. In Virginia, for instance, SCS and ASCS are together in 60 out of 77 field locations.

In a recent edition of the *Tuesday Letter*, M. E. "Bud" Mekelburg, president of the National Association of Conservation Districts, commended ASCS for encouraging its county offices to require farmers receiving ACP cost-sharing to maintain the entire conservation system needed to support the cost-shared practice. Bud wants to see that Federal funds used to cost-share conservation practices buy as much conservation as possible. Both SCS and ASCS agree.

A little more than a year ago, ASCS Administrator Everett Rank and I issued a memorandum on cooperation between our two agencies. We said that a common goal of our agencies is to help assure the economic health and productivity of American agriculture and to protect the resource base on which that productivity depends. We wrote of a spirit of constructive cooperation, not only between our agencies but also with conservation districts and the many other Federal, State, and local agencies we work with every day.

It bears repeating that we owe at least that much to the American taxpayer, who has a right to expect efficient government; we owe it to each farmer and rancher who depends on our agencies for service and assistance.



---

**Cover:** Keeping grassland in grass. As the plowing of fragile grasslands increases, so does the fear of another Dust Bowl. (See articles beginning on page 9.)



John R. Block  
Secretary of Agriculture

Peter C. Myers, Chief  
Soil Conservation Service

All programs of the U.S. Department of Agriculture are available to everyone without regard to race, creed, color, sex, age, or national origin.

Editor, Judith E. Ladd

Associate Editor, Nancy M. Garlitz

Assistant Editor, Donald L. Comis

Editorial Assistant, Ann P. Serota

Design Consultant, Christopher Lozos

Reprint permission  
Contents of this magazine may be reprinted without special permission. Mention of source requested. Photos available on request.

Commercial names  
Mention of commercial enterprises or brand names does not constitute endorsement or imply preference by the U.S. Department of Agriculture

## News Briefs

### Senate Hearings Held on Soil and Water Conservation

Citizens involved in agriculture praised the U.S. Department of Agriculture's (USDA) involvement in conservation but reiterated some old concerns in a series of Congressional hearings on USDA's National Conservation Program (NCP).

The hearings were conducted by Senator Roger W. Jepsen of Iowa, chairman of the Subcommittee on Conservation, Forestry, and Environment of the Senate Committee on Agriculture, Nutrition, and Forestry.

In all, nearly 100 people testified at regional hearings in Jackson, Miss., on May 31, 1983; Louisville, Ky., on June 1; Ames, Iowa, on June 13; and Brattleboro, Vt., on June 24. They included farmers, employees of local and State government, and representatives of conservation and environmental organizations. Representatives of five national conservation and environmental organizations and one State agency testified at a national hearing in Washington, D.C., on June 28. Secretary of Agriculture John R. Block had previously testified before the subcommittee on March 9.

Most of those who testified called for USDA to continue its strong role in soil and water conservation, and some even suggested that USDA's traditional voluntary approach to conservation has been too weak.

Most speakers favored the provision in the NCP that requires recipients of some loans from USDA's Farmers Home Administration to have a conservation plan. This provision is generally regarded as "cross-compliance," that is, requiring conservation performance as a condition of eligibility for benefits of other USDA programs. The growing acceptance of this concept represents a softening of the outright opposition that cross-compliance has traditionally faced.

At the same time, however, most

speakers expressed concern over the proposed levels of Federal funding for conservation. Others said that overall program funding should be increased to enable USDA to target additional assistance without jeopardizing non-targeted areas. USDA's position is that given the current economic situation and the need for constrained Federal spending, the NCP has enabled USDA to set priorities for the most effective use of available funds.

Several speakers were disappointed by the decision to remove from the NCP all provisions for slowing the conversion of agricultural lands to other uses. They said that the Farmland Protection Policy Act, which is part of the 1981 Farm Bill, already provides USDA the authority to discourage such conversions and should be implemented.

USDA has taken the position that farmland conversion is an issue that is broader than the NCP. The Department has programs and policies dealing with farmland retention, and has Federal leadership through the Farmland Protection Policy Act to discourage Federal policies that lead to conversion of farmland. A proposed rule governing the implementation of the Act was published in the *Federal Register* on July 12. The public comment period extends until September 12.

According to several speakers, public awareness of the need for soil and water conservation is at its highest level since the Dust Bowl. And most agreed that soil erosion and related natural resource problems are genuine threats to our resources and their potential to sustain production.

**Peter M. Tidd,**  
director, Appraisal and Program Development  
Division, SCS, Washington, D.C.

### RCA Update

During the past few months, the National Conservation Program has become more than just the broad outline of future U.S. Department of Agriculture (USDA) conservation programs. The task force charged with implementing the NCP (see "RCA Update" in the August 1983 issue of *Soil and Water Conservation News*) has met several times recently to discuss and approve staff reports of plans for implementing specific program features.

In a meeting on June 29, 1983, the Task Force reviewed progress in plans for targeting technical and financial assistance, redirecting program emphasis to priority problems, resolving inconsistencies among USDA programs, and changing the eligibility requirements for loans from the Farmers Home Administration.

As part of this implementation process, the Soil Conservation Service has updated its General Manual to include an agency long-range targeting plan and distributed it to all field locations. The plan sets forth SCS's broad targeting policies, which will guide the selection of targeted areas and ways of allocating funds to targeted areas. Milton E. "Bud" Mekelburg, president of the National Association of Conservation Districts, has likewise distributed the plan to all conservation district offices nationwide.

**James N. Benson,**  
public affairs specialist, Public Information,  
SCS, Washington, D.C.

# Reclaiming Mined Land

## Abandoned Coal-Mined Land Reclaimed in 18 States

Nearly 3,000 acres of abandoned coal-mined land in 18 States have been reclaimed since 1977 for various uses under the Rural Abandoned Mine Program. The reclamation work has eliminated more than 500 health and safety hazards and prevented 95,000 tons of soil from leaving the sites and entering waterways. Water quality has been improved on 42,231 surface acres of lakes and 133 miles of streams.

The majority of the reclaimed land is being converted to grass and trees.

The program, established by the Secretary of Agriculture under authority of the Surface Mining Control and Reclamation Act of 1977, provides individual owners with cost sharing and technical assistance to reclaim abandoned coal-mined land.

Funds for the program come from fees collected from active coal mining companies. By March 1983, funds had been obligated for 322 contracts covering 6,146 acres. Seventy-four of the contracts were signed in September 1982, utilizing a \$14 million supplemental appropriation.

The Federal Government's share of the reclamation ranges from 25 to 100 percent, depending on such factors as the acreage to be reclaimed, the proposed use, and whether the resulting benefits are mostly private or public.

Each landowner may receive funds for reclaiming up to 320 acres. The contracts run from 5 to 10 years.

## Caved-In Coal Mines Are Converted to Pastures and Forests

Landowners in northeast Texas are using the Rural Abandoned Mine Program (RAMP) to convert dangerous caved-in coal mines to productive pastures and pine forests. Max W. Baker, Soil Conservation Service district conservationist at Mineola, and his staff have helped 10 landowners reclaim 400 acres of mined land.

A total of about 1,000 acres was damaged by lignite mining that occurred from the 1860's until the last mine closed in 1946. Lignite is a low-grade brownish-black coal in which the texture of the original wood can still be seen.

Baker said 14 mines were in operation at one time near the mining towns of Hoyt and Alba, which had a combined population of at least 3,500. Now, about 500 people live in the area. Lignite from the mines furnished fuel for steam powered locomotives for the Texas and Pacific Railroad, which ran through the area, and for a salt company plant at nearby Grand Saline.

"The land we worked on has tunnels and shafts running through it, mostly at depths of 20 to 120 feet below the surface," Baker said. "Cave-ins have occurred since the first mine was opened and they are a constant threat, even today."

Baker revealed that on at least two occasions, a nearby highway had to be closed because it, too, caved in.

"The problem was the way they mined lignite in those days," Baker continued. "They used what was called the 'pillar and room' method."

With this system, miners would dig a long tunnel all the way to the end of the vein. Then they would mine the lignite in room-sized sections off the main tunnel, leaving a pillar of lignite between the main tunnel and the room. After the room was mined, they would dig the lignite from the pillar. Later, the room would cave in.

As a result, the area is pockmarked with holes resembling an area raked with heavy artillery fire.

"Landowners are afraid to run cattle on the land because livestock fall into the holes and because of the danger of additional cave-ins," Baker continued. "Many of the old tunnels are still intact, and people tell some spooky stories about what has happened here in the past 120 years."

To reclaim the land, contractors clear and burn the brush that covers the land. Next, the holes and caves are smoothed and filled with soil by bulldozers; this operation lowers the surface elevation 2 to 3 feet. A seedbed is then prepared, and the land is planted to bahiagrass, Coastal bermudagrass, or to pine seedlings.

Baker encourages landowners to leave small stands of trees for wildlife food and cover. About 8 acres of land has also been planted, in strips, to youpon, pecan, wild plum, honeysuckle, and autumn olive for wildlife habitat improvement.

Since most of the pits contain stagnant water, they are considered a health hazard. Because of the safety and health dangers, RAMP funds were used to pay all reclamation costs.

"Conservation treatment has been costing an average of about \$1,200 per acre," Baker said. "But the land is still dangerous. Additional cave-ins could occur at any time. One area we treated caved in and had to be reshaped and reseeded."

Members of the local RAMP Reclamation Committee and Baker accept applications from landowners and set priorities based on the land's threat to safety and health. Committee members include directors of local soil and water conservation districts and other interested persons. Producers who lease or rent land are also eligible for the program provided they have a long lease on the property and can get the landowner to co-sign the conservation treatment contract with SCS.

**Dale D. Allen,**  
public affairs specialist, SCS, Temple, Tex



## A Safe Place to Land

"November 3151 Whiskey. Left downwind. Preparing for final approach, runway 2 at Brazil."

Chances are this pilot will land safely at Arthur Municipal Airport near Brazil, Ind. At one time, though, dangerous crosswinds would have made landing hazardous.

The airport is the site of a project under the Rural Abandoned Mine Program (RAMP) administered by the Soil Conservation Service. RAMP is designed to reclaim abandoned coal mined areas that have been declared a public hazard.

As a result of past mining operations, a 20-foot-high spoil bank at the airport covered 1,200 feet on the north side of the runway, and two huge gaps at each end of the spoil bank created dangerous crosswinds for landing aircraft. Strip pits around the runway presented an additional risk. The Federal Aviation Administration (FAA) previously identified this airport as having hazardous wind conditions and a safety hazard because of the high spoil bank.

The airport is used by experienced aviators as well as student pilots. The coal industry and local businesses use it to fly in heavy machinery parts from other

States. These companies lose money, time, and productivity when planes cannot land at Brazil but are detoured to Terre Haute or as far away as Indianapolis.

In 1979, Joe Arthur, president of the Airport Board at that time, became very concerned with the multitude of problems caused by the pits, steep slopes, and wind currents. "Accidents at the airport have caused much property damage, but so far no fatalities have occurred," said Arthur. "One student pilot got off the runway with nowhere to taxi because the stripper hills, ponds, and trees were in the way. He overcorrected causing the plane to go over on its nose. The two-passenger plane was demolished."

Arthur contacted the Soil Conservation Service for help. The airport site was investigated, the problems surveyed, and an environmental assessment made.

The Indiana State RAMP Committee—made up of representatives from the Indiana Association of Soil and Water Conservation Districts, State Soil and Water Conservation Committee, Indiana Department of Natural Resources, Office of Surface Mining, U.S. Geological Survey, Cooperative Extension Service, Agricultural Stabilization and Conservation Service, Farmers Home Administration,

Forest Service, and SCS—toured the airport. Everyone on the committee agreed that this was a "priority one" job under RAMP because of the existing threat to human safety. The State Aeronautics Commission and FAA were consulted for air safety requirements.

Plans were developed to control water removal and problem wind currents, as well as to meet FAA requirements for air safety. A 250-foot area on both sides of the runway was leveled. Strip pits were filled and a wind block was created.

John Summers, current president of the Airport Board, said, "A small airport is pretty handy. We handle a lot of touch and go traffic, especially on weekends. Plane safety and personal security are important to any pilot. RAMP has made this airport a safer place to land. Now that the grass is seeded and the runway lights are back on, we fly it and feel the difference."

**James D. Glover,**  
district conservationist, SCS, Brazil, Ind.

**Mary Cressel,**  
public affairs specialist, SCS, Indianapolis, Ind.



A 250-foot area on both sides of the Arthur Municipal Airport runway near Brazil, Ind., has been cleared of a hazardous spoil bank and is ready for seeding. In addition, dangerous strip pits were filled under the Rural Abandoned Mine Program project.

## Drip Irrigation Benefits Reclamation Plantings

The old town of Monarch, Wyo., was once a thriving coal town. Today, an old church and the scars of coal mining are all that remain. Numerous subsidence pits are hazardous to the area's ranchers and their livestock.

One rancher, Bill Long, a cooperater with the Clear Water Conservation District, recognized the hazards on his property and wanted to do something about them. He signed an agreement with the Soil Conservation Service in May 1981 to reclaim 26 acres of old mine land under the Rural Abandoned Mine Program (RAMP).

To reclaim the 103 pits on the site, 36,000 cubic yards of earth had to be moved. In order to locate shafts close to the surface, surface soils were soaked for 3 days with hand set sprinklers. Then a crane carrying a 7,500-pound concrete block was brought in on roadways that had been constructed on the contour. The crane dropped the concrete block from a 20-foot height at 20-foot intervals along the roadways. The shock of the concrete on the wet soil caused several areas to subside that might have gone undetected until they caved in years later.

To control excess ground water coming from the old mine, 2,350 feet of drain pipe was installed at the toe of the site. This had an added benefit of keeping water out of the Long's house, which is located at the toe of the site. "I normally would have a foot of water in the basement in the spring," Long said. "Now, the basement is dry year round."

Because the drain also dried a wetland area, suitable replacement habitat had to be provided. The contract called for a pond to be constructed to provide habitat for waterfowl. Long plans to stock it with smallmouth bass.

About 5 acres of the site was hydro-seeded. On the other 21 acres, a seedbed was prepared by mulching and disking, then the seed was drilled. The mixture of green needlegrass, pubescent wheatgrass, and 'Rosana' western wheatgrass proved to be an excellent selection for the

15- to 19-inch annual precipitation area.

Specialists drew up a plan for 810 plants of different species for windbreaks, wildlife habitat, and esthetics. The plants include serviceberry, spruce, ponderosa pine, plum, honeysuckle, poplar, rocky mountain juniper, nanking cherry, Russian olive, golden willow, and chokecherry.

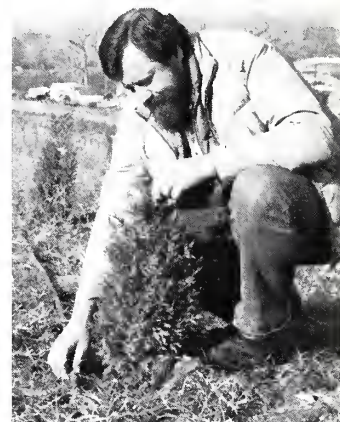
At this site, drip irrigation was used for the first time on a RAMP project in Sheridan County. Approximately 10,000 feet of drip line was needed to reach all the plantings. "There is no question that the trees have responded to the extra water, even though the system was a little late being installed," Long said.

Two other RAMP projects have been completed in Sheridan County—both near schools in Arvada. Another project began in July and a fifth project will begin in October.

Bill Long is pleased with the results of his reclamation work. Not only has the hazard of open pits been solved, but reseeding has also greatly increased his rangeland production and reduced erosion. The esthetics of the area will be greatly enhanced with the plantings and a pioneer project for the county, drip irrigation, has been tested and so far proven effective for RAMP projects as well as windbreak establishment at other locations.

**Keith Covington,**  
district conservationist, SCS, Sheridan, Wyo

**Alfred Destefano,**  
civil engineering technician,  
SCS, Sheridan, Wyo



At left, nicknamed the "Thumper," a crane carrying a 7,500-pound concrete block was used to locate mine shafts. Above, John Julien, SCS range conservationist, inspects drip irrigation line at the RAMP site.



## Ohio Mined Land To Be Reclaimed in Seven Phases

More than 6,000 acres of old abandoned mine land scar the rolling grassland farms of Meigs County, Ohio. Seven hundred acres of this barren, highly erosive, mined land are now called the Snowville Special Project Area, and are marked for reclamation in seven phases. The reclamation will be completed by the Soil Conservation Service and the Meigs Soil and Water Conservation District (SWCD) in cooperation with the Ohio Department of Natural Resources, Division of Reclamation.

All of the Snowville project is in the West Branch of Shade River watershed. Late in 1982, 90 acres of the most erosive mine land in the upper reaches of the watershed was reclaimed. The work was the first phase of the Snowville project and

reclaimed under the Rural Abandoned Mine Program (RAMP).

Erosion on this abandoned mine land occurs at rates of up to 200 tons per acre per year. Gullies 20 to 40 feet deep are common.

Many streambeds are filled with acid sediment, and road and farmland flooding is a common occurrence because of heavy sedimentation from the mined land. The area was mined and abandoned in the early fifties, and today most of the mined land is very acid with an average pH of 2.8.

SCS, working through Meigs SWCD, signed the first RAMP contracts with five landowners and reclamation work was underway. Contracts required the abandoned mine land to be graded and reshaped, and diversions, grassed waterways, and other water management practices to be installed. Soil was added to most of the reworked area, and then

seeded to establish a dense grass cover.

Composted sludge from a paper mill was used on 6 acres in place of soil. Only 2 inches of sludge was used compared to 8 inches of soil. The compost-treated and resoiled areas are showing equally vigorous growth.

The contracts require the land to remain as wildlife land for a minimum of 5 years. When the contracts expire, the landowners will be responsible for maintaining the vegetation and water management structures.

Reclamation work on the second phase of the Snowville Special Project, covering 40 more acres, was begun during summer 1983.

**Robert L. First,**  
district conservationist, SCS, Pomeroy, Ohio

## At Home With RAMP

A former West Virginia University (WVU) student has won a national landscape architecture award with a design for earth-shelter housing on an old surface mine. The Soil Conservation Service had identified the mine for reclamation under the Rural Abandoned Mine Program (RAMP).

"Terra Lake—A Community That's Down to Earth" was the title for the senior project of Ronald S. Cutlip in his landscape architecture class in the WVU College of Agriculture and Forestry. He envisioned homes tied closely to the earth, made of conventional building materials but partially buried in the old outer spoil bank of the mine or terraced down against the abandoned highwall. His plan would take advantage of the lake formed by the outer spoil, using it as a natural feature in the midst of the housing development.

Covering one to three outer walls with soil would help keep down both heating and cooling bills. Cutlip's houses would also be equipped with solar heating units.

He became interested in the project during a guest lecture by former SCS Landscape Architect Mark Fleming.



Before reclamation, this area of mined land in Meigs County, Ohio, was subject to erosion, sediment deposition in streambeds, and farmland flooding.



Under a Rural Abandoned Mine Program project, 90 acres of the most erosive mined land was graded and reshaped. Water management practices were installed and the area was seeded to grass.

Associate Professor Steve McBride invited Fleming to discuss the landscape architect's role under RAMP. Then McBride and Fleming chose an actual RAMP site close to WVU for a class project. The class visited the 20-acre Eldora Site near Fairmont, W. Va., to get a firsthand look and collect data.

SCS Engineer John Weller introduced the class to survey maps and geologic data and explained SCS reclamation plans. For the class, the project involved investigating and analyzing the site and designing reclamation to return the old coal mine to a beneficial land use.

Cutlip, taking a deeper interest, contacted Fleming and Weller for more information and attended the 1981 Underground Space Conference in Kansas City, Mo. His design won the WVU student design competition and was awarded the Certificate of Honor at WVU from the American Society of Landscape Architects (ASLA).

He was then invited to participate in a design competition throughout the United States and Canada. Professors Alon Kvashny and Dave Utterback helped him prepare the project, and it was one of four winners of the Distinguished Undergraduate Award. Cutlip received his award at the 1982 ASLA annual meeting in Honolulu, Hawaii. He now works for a landscape architecture firm in Alexandria, Va.

Because housing developments are not eligible to be cost shared under RAMP, Cutlip's design could not be included in the SCS plan for reclaiming the Eldora Site. The SCS design involves draining the 30 million gallons of trapped water, grading the former surface mine, and revegetating the area. Although Cutlip's design was not used on this site, the recognition it gained indicated that it may influence similar development on other mine sites in the future.

---

**James Thorn,**  
public affairs specialist, SCS, Morgantown, W. Va.

---

## Smooth Sumac Tested for Growth on Mine Spoil

Each fall, the landscape from Maine west to Michigan and south to Alabama and Georgia becomes a multicolored display of red, yellow, and brown as native trees, shrubs, and other plants mature and assume their fall colors. One of the most colorful plants in this brilliant fall landscape, smooth sumac, is being evaluated by the Soil Conservation Service for an erosion control plant on acid mine spoil.

In southern Indiana, and other surface mining areas in the Eastern Interior Coal Region, large mounds or piles of soil material created by mining activities are common. Establishing vegetative cover on these mounds has been difficult because the disturbed shale material is very acidic, and erosion continues to be a serious problem on the steep slopes associated with mine spoil disposal.

SCS plant specialists and conservationists believe smooth sumac, which has not been widely tested, will be a good plant to help revegetate and control erosion on acid mine spoil in southern Indiana and other mining areas. Although smooth sumac grows best when the soil has a pH range of 5.0 to 6.0, it will grow reasonably well in more acid soils.

To select a superior smooth sumac for this tough job, one of the broadest collections of smooth sumac, *Rhus glabra*, ever completed was made recently by the Rose Lake Plant Materials Center (PMC) near East Lansing, Mich. The collection area covered 41 major land resource areas in Missouri, Iowa, and Nebraska, and the 18 States east of the Mississippi River and north of Tennessee.

SCS personnel located in these States collected seed from approximately 200 different smooth sumac plants based on information and instructions they received to help them identify potentially superior plants.

When the field collections were completed, they were packaged and sent to the Rose Lake PMC. When the seeds arrived at the center they were cleaned, labeled for future identification, and planted. To increase germination, smooth

sumac seed needed special treatment at planting time. This was done by dipping the seeds in boiling water before planting them in special plots in fall 1981.

One hundred sixty-three of the 200 collections produced plants in spring 1982. Evaluations began as soon as the new seedlings emerged from the soil, and continued throughout the summer. Seedling vigor, resistance to insects and diseases, and germination rates were observed and recorded.

Last fall, the 1-year-old plants were dug, counted, and placed in cold storage. This spring 10 plants from each of the 163 collections were transplanted at the PMC and the comparative evaluation of their survival, growth rate, and resistance to insects and diseases will continue.

Outstanding plants from this broad-based assembly and evaluation will be tested in field trials on acid mine spoil at selected locations. The plants will continue to be evaluated for their ability to grow in acid mine spoil, provide vegetative cover, and control erosion. The superior plant selected for this purpose will be increased, and its range of adaptation will be determined. Seeds or plants of this improved plant will be provided to nurseries for commercial production and sale to all land users.

---

**Ellis G. Humphrey,**  
manager, Rose Lake Plant Materials Center,  
SCS, East Lansing, Mich.

---



# Grassland Plowout: Ranchers Fear the Next Dust Bowl

In recent years, speculators and farmers have plowed fragile grasslands in the Great Plains at such a frantic pace that many people fear another Dust Bowl.

Soil Conservation Service National Range Conservationist Don Pendleton echoes their fears when he says, "With one or two real dry seasons, we could see dust storms like we haven't seen since the thirties."

Pendleton says some of the lands being plowed to grow wheat and other crops are highly erodible, mainly those classified by SCS as IVe, VIe, and VII. The "e" represents a subclass of soils for which the main limitation affecting its suitability for cultivation is its erodibility. Class IVe lands are marginal for cultivated crops, while Class VIe and VII lands are generally not suited to cultivation. Sod cover has kept the topsoil on these lands from blowing away over the centuries.

People in the Great Plains States are alarmed because they know that even with adequate moisture, strong winds damage millions of acres of land each year, mostly cropland.

Pendleton says the main plow-out or sodbusting problem is west of the 100th meridian, which runs through Dodge City, Kans. It is most critical in the Western Great Plains because the rainfall is too limited to allow even weeds to grow back quickly enough to protect the land.

Colorado and Montana have had the most rangeland plowed in recent years, with Montana leading the Nation in number of acres plowed, at least during the first 2 months of the spring plowing season this year. Colorado lost more than half a million acres to the plow between 1978 and 1982, and another 58,143 acres during April and May this year.

These figures are estimates compiled by SCS with the help of local conservation districts. Colorado received monthly updates during the plowing season of April, May, and June this year.

Montana is not formally counting acres plowed; but in just two instances this past spring, landowners have plowed more than 70,000 acres. In one case, a Petroleum County farmer brought in a fleet of 14 tractors and plowed 20,000

acres on an 88,000-acre tract of rangeland. In another case, more than 50,000 acres of a recently purchased 76,000-acre ranch have been plowed so far.

Big plow-outs such as these make headlines in local newspapers and are easier to count than the many small parcels broken out by local farmers and ranchers. SCS Range Conservationist Arnold Norman, in Miles City, Mont., says that every time he tours his 17-county area in eastern Montana "a new area of 200 to 300 acres has been broken out."

It was the plowing of 15,000 acres of grassland last year in northern Colorado's Weld County that led that county to pass the Nation's first local ordinance requiring a permit to plow fragile grasslands. The 20,000-acre plow-out in Petroleum County has sparked cries for similar action there.

Landowners make their biggest profits from plow-out when the rangeland becomes cropland and its value at least doubles. The size of their farms helps keep costs low, and there are additional benefits from tax breaks and Federal commodity programs.

Many ranchers would rather limit big plow-outs by ending some of the unfair, short-term economic benefits rather than by regulations. Their dilemma is that, while they abhor the practice and are not likely to do it themselves, they don't want to lose the right to sell their land at the highest possible price, even to someone who may plow it.

Meanwhile, SCS can reduce the damage caused by indiscriminate plow-outs by helping ranchers and farmers identify and avoid plowing soil with potential wind erosion problems. Pendleton says since plow-out is an education problem, SCS and other USDA agencies will rely on USDA's Extension Service to help them convince owners and operators that, in many cases, the centuries-old sod is the only thing between them and the next drought.

**Donald L. Comis,**  
assistant editor, *Soil and Water Conservation News*,  
SCS, Washington, D.C.

## Colorado Counties Adopt Grassland-Plowing Controls

Last year, Weld County, in northern Colorado, passed a land use ordinance prohibiting the plowing of grasslands without a permit and a conservation plan.

According to Weld County Commissioner Chuck Carlson, the ordinance is proving very effective. "We've discouraged landowners who might otherwise have plowed fragile grasslands," he said. "To date, we've approved 11 permits to plow grasslands. These were approved after we determined that the lands in question could sustain long-term farming and the landowner agreed to apply the needed soil conservation practices."

Under Colorado law, other counties would have to set up a home-rule charter, as Weld County has, before they could pass a similar ordinance. But they can accomplish many of the same things with zoning regulations. These regulations can also require a permit and conservation plan before grasslands can be plowed, but the penalty for violation is not quite as severe as for an ordinance violation. The maximum penalty for a zoning violation is a fine of \$100 for each day of violation, whereas under Weld County's ordinance, a violator can be fined up to \$300 a day, plus be jailed for up to 90 days.

Adams County, just south of Weld, approved such a zoning regulation this year. John Colt, an Adams County planner, says, "We hope we never have to impose a fine. If landowners comply with the grassland zoning, there should be no problem. We will work with the soil conservation districts to determine which grasslands can or cannot be plowed."

Otero County passed a grassland zoning regulation in June and other counties such as Prowers and Kit Carson, in eastern Colorado, are considering similar zoning regulations.

**Jerry D. Schwien,**  
public affairs specialist, SCS, Denver, Colo.



## **Eastern Colorado: Keeping the Ranch in Grassland**

"Ranching isn't easy in the eastern Colorado Plains," says John Monnahan, of Deer Trail, Colo. His neighbors advise him to plow up his native grassland and plant winter wheat, because, they say, there isn't enough water in this semiarid area to raise cattle. They also say he can't pay his mortgage by selling cattle at the low prices that have been offered in the past 2 years.

In 1979, when Monnahan bought his ranch in Arapahoe County, Colo., there was a farm only on the east side of his ranch. Two years later, he faced 10,880 newly plowed acres on the north side. Arapahoe County, just south of Adams County, lost 41,000 acres of grassland in the last 5 years, and lost another 4,550 acres just in the first 2 weeks of May 1983.

The temptations to give up ranching are there for Monnahan, too. His balloon mortgage rate jumped from 8 to 12.5 percent this year, the cost of gasoline almost doubled in the past several years, and his other costs are up about one-third. But the first year he owned his ranch, he sold his calves for 93 cents a pound; 2 years later he got only 68 cents a pound. If he plowed his land, its appraised value would double, allowing him to borrow more money with the land as collateral. He could harvest some good wheat crops until the soil blew away, or he could sell the land.

But Monnahan, a cooperator with the Deer Trail Soil Conservation District, is determined to stay a rancher and he knew when he bought the ranch that he'd have a better chance if he had more water.

The only water sources on the ranch were four earthen dams—only two of which held water—and one well which supplied a water storage tank. The entire ranch was managed as one pasture. As a result, the areas near water were overgrazed and the outlying portions of the pasture weren't grazed at all.

Monnahan applied for assistance at the Soil Conservation Service field office in Fort Collins, Colo. Charlie Hogelin—then the

SCS district conservationist and now an SCS agronomist in Torrington, Wyo.—worked with Monnahan to develop a conservation plan to improve grazing distribution and increase the productivity of his rangeland.

Monnahan decided to divide the ranch into three pastures, with fences, and develop a planned grazing system to rotate grazing among the pastures. He would provide water for each pasture by digging three more wells, installing more storage tanks, and laying an underground pipeline to convey water from the existing well to other unwatered areas. SCS State Geologist Alex Elkin helped Monnahan and Hogelin determine probable water locations for the new wells.

Monnahan obtained Great Plains Conservation Program funding and began his conservation plan, saving money by doing most of the work himself. He successfully found water at all three recommended locations, including 20 gallons of water per minute from one well. He put a windmill pump and a storage tank at each new well. He uses an electric pump to push water through 3½ miles of plastic pipe, from the existing well to additional storage tanks throughout the ranch.

Last year, 3 years after he decided to do something to keep his ranch in grass, the job of installing the conservation practices was completed. With more than one water facility in each of three pastures, the grazing distribution problem is solved and Monnahan has been able to improve the quantity and quality of his forage.

Monnahan succeeded in making his ranch more productive; however, he is concerned about the long-term effects of his neighbor's land conversions. He knows this land has a very high erosion hazard. Monnahan says, "The ground around here isn't suited for cropland. The soils are too shallow and sandy and the slopes are too steep. When the limited topsoil has been blown, washed, and drained of soil nutrients, what will happen next?"

**Donald L. Comis,**  
assistant editor, *Soil and Water Conservation News*,  
SCS, Washington, D.C.

## **Western Colorado: Decreasing Wheat Yields, Deepening Gullies**

Shall we grow wheat and watch the land erode or keep it in grass? That's the dilemma for farmers and ranchers in Moffat County, at the northwest corner of Colorado.

Mark Waggoner, Soil Conservation Service soil conservationist formerly in Moffat County and now in Mesa County, Colo., says, "This land is plainly being used out of its capability." He's talking of Class VI and VII rangeland which is being plowed and planted to wheat.

In recent years, the acreage of non-irrigated cropland in Moffat County has increased to 100,000, with 70 percent being on Class VI and VII lands. This is rolling sagebrush-grass country, with many slopes exceeding 12 percent.

On much of the land, sheet erosion ranges from 10 to 18 tons per acre per year, according to estimates made using the Universal Soil Loss Equation (USLE). However, the USLE does not measure gully erosion, which is severe and prevalent here. Waggoner says when gully erosion is included, "Erosion here is probably on the same scale as that of the Palouse region of Washington." An SCS agronomist from Portland, Oreg., visited the area and agreed, estimating that the very deep gullies in one field would add 40 to 50 tons per acre per year to the USLE estimate for that field, which was 10 to 20 tons per acre per year.

Fortunately, the problem is being recognized by area farmers and the return to grassland is starting to gain momentum. Landowners, cooperating with the Colorado First Soil Conservation District and SCS, are seeding about 1,000 acres back to grass each year, usually with pubescent and intermediate wheatgrass.

On Class IV lands continuing in wheat, which is most of the cropland in this area, more farmers and ranchers are starting to use conservation tillage, strip cropping, grassed waterways, and other conservation practices.

One reason for the change is a declining winter wheat yield, in spite of

above average precipitation in the past several years. Average yields now range from 16 to 19 bushels per acre, down from the 30 to 40 bushels per acre common 20 years ago. Occasionally there are years in which the yields reach 30 or more bushels per acre, such as last year, but no one can count on that happening every year.

Plow-out of Class VI and VII lands, less than 1,000 acres last year, is not bad compared to eastern Colorado. But the high erosion rate in Moffat County, combined with the very shallow soils, makes it very important to shelter these lands with suitable forage cover.

**William Lee Hill,**  
district conservationist, SCS, Craig, Colo.

---

## Plow-Out Spreads to Kansas

The practice of converting rangeland to cropland is spreading east, from Colorado to Cheyenne County in northwestern Kansas.

Within the past 3 years, about 3,000 acres of mostly Class VI rangeland has been plowed, with the majority of the acreages in large tracts plowed by a few farmers. Several farmers have plowed just a few acres around existing cropland fields, either to straighten field borders or to make use of flatter, more productive land that just happened to be in grass. In some cases, steeper areas at the edge of a field that the farmer views as wasteland are farmed.

If slope and soil type allow, some of this converted land can be maintained in a productive state by applying intensive management and conservation practices. Close terrace spacing is needed because of steepness. Steep-backslope terraces are more suited to this type of land because they tend to reduce the overall land slope between terraces. In addition, contour farming and higher residue levels are necessary to reduce silting of the channel and to help prolong the life of the terrace.

On steeper land, even with terraces and the higher residue levels, erosion may not

be controlled. Higher residue levels are not always possible on eroded hillsides and, after a few years, conventional terraces soon fill with silt and become useless.

In these cases, the best thing these lands are suited for is rangeland.

When considering the whys for converting rangeland to cropland, often the reason is economics. Some farmers feel they are better off economically to farm a hillside than to leave it as rangeland.

If put into crop, the first year or two this hillside may produce well using the same farming techniques as on less sloping adjoining land. Soon, however, more and more costs in the form of fertilizer and machinery wear and tear (hillsides are harder on equipment) will be needed to produce less and less crop. Even with these increased inputs, hillsides seldom if ever produce as well as the less sloping land. To see this, one has only to look at any given field in the fall or early spring to see where the poor stand of wheat is located.

If farmers take a hard look at their money inputs versus the crop output of this steeper land, they may find the cost of trying to get a crop is greater than the crop can return. The Soil Conservation Service has developed worksheets which area farmers can use to compare returns on land if used for crops and on the same land if used for rangeland.

So, if after a couple of good crops, yields go down, why not quit farming the hillside and let it go back to grass? This reasoning sounds acceptable at first glance, but consider this: It takes 20 years or more for desirable grasses to return to a disturbed area by natural processes. Seeding this area to a mixture of native or adapted introduced grasses speeds this process; but if all the valuable topsoil is gone, even this method does not assure a stand of grass.

The alternative is to leave these steep marginal lands in native range.

Small pockets of grass and brush are not really wasted. Pheasant, deer, and other wildlife use these areas for food and cover. These small patches of grass can also be grazed along with nearby crop

residues in the fall, or perhaps by moving a fence or putting up an electric wire, they could be grazed along with a larger piece of grassland.

The decision farmers ultimately make to farm that rough pasture or leave it as rangeland rests with their personal goals and the way their farms are set up. If the alternatives are weighed objectively, they may find themselves better off harvesting pounds of beef than trying for bushels of wheat.

**Joan Gienger,**  
district conservationist, SCS, St. Francis, Kans.

---

## Symposium Held on the Plowing of Fragile Grasslands in Colorado

Last November, the Colorado Section of the Society for Range Management sponsored a symposium on the issue of plowing of grasslands in Colorado. Abstracts of the papers presented at the symposium and a summary of the meeting were published in the April 1983 issue of *Rangelands* magazine.

Senator William L. Armstrong of Colorado explained his "Sodbuster" Amendment and Milton E. "Bud" Mekelburg, president of the National Association of Conservation Districts (NACD), presented the NACD position on plow-out. One speaker discussed the effects on wildlife populations and another discussed the difficulty of reestablishing perennial grasses. Other speakers included farmers, ranchers, local and State officials, a seed company representative, and a realtor.

A limited number of free reprints of "Symposium on the Plowing of Fragile Grasslands in Colorado" are available from USDA-ARS, Forage and Range Research, Crops Research Laboratory, Colorado State University, Fort Collins, Colo. 80523.

---



Moving?

Send present mailing label and new address including zip code to:

U.S. Department of Agriculture  
Soil Conservation Service  
P.O. Box 2890, Room 0213-S  
Washington, D.C. 20013

Official Business  
Penalty for private use, \$300



## Grass Seeding Trials Hold Promise for Improving Overgrazed Rangeland

First-year observations of 12 grass varieties being evaluated to improve overgrazed rangeland on a mountain ridge in central Colorado show 6 varieties of wheatgrasses among the 8 most successful varieties.

In fall 1981, the Upper Arkansas Soil Conservation District (SCD); the Soil Conservation Service field office in Salida, Colo.; and the Upper Colorado Environmental Plant Center in Meeker, Colo., jointly prepared and seeded two trial plots near Badger Creek, a small mountain stream that is a tributary of the Arkansas River.

Bob Schroeder, SCS district conservationist at Salida, says Badger Creek is subject to frequent and devastating floods which cause serious erosion to the watershed and degrade the water quality of the Arkansas River. The lower portion of Badger Creek is the major brown trout spawning grounds for the Arkansas.

Schroeder says overgrazing and droughts have caused vegetation to deteriorate to poor condition on much of the rangeland in the upper watershed, resulting in accelerated erosion.

The seeding trials will show what grasses are hardy enough to halt further vegetative decline and reduce soil loss in the watershed's harsh environment. The rangeland is on slopes and ridges exposed to strong winds year round, at elevations above 9,000 feet, and with an estimated annual precipitation of only 14 to 18 inches.

The two plots, approximately an acre each, were prepared on USDA Forest Service land and on land owned by Frank McMurray, chairman of the Upper Arkansas SCD. Both plots are on typical overgrazed rangeland near the creek, in the upper watershed. The difference between the two plots is the soils—one

has very shallow soil and the other has a deeper soil.

Each plot has three levels of seedbed preparation: complete, limited, and none. The grasses are planted in strips that cross all levels of preparation to see if they can thrive with less than complete seedbed preparation.

But evaluations of the plots last November showed that the seedbeds with complete preparation had much better stands of grasses than those with less or no preparation. The most successful grasses so far are: 'Tegmar' dwarf intermediate wheatgrass, 'Luna' pubescent wheatgrass, 'Rosana' western wheatgrass, 'Nordan' crested wheatgrass, 'Sodar' streambank wheatgrass, 'P-27' Siberian wheatgrass, 'Manchar' smooth brome, and an unnamed variety of Russian wildrye. Schroeder says he was surprised that the following wheatgrasses had enough vigor to sprout numerous seedheads their first year: Luna pubescent, Tegmar dwarf intermediate, Rosana western, Nordan crested, and P-27 Siberian.

The other grasses being tested are: 'Whitmar' beardless wheatgrass, 'Redondo' Arizona fescue, 'Covar' sheep fescue, and 'Shoshone' beardless wildrye. All 12 varieties have been released for conservation uses from SCS plant materials centers, in cooperation with

State Agricultural Experiment Stations and other agencies.

The Badger Creek grass trials are being conducted in conjunction with an inter-agency study of the watershed, involving the Upper Arkansas SCD, the Teller-Park SCD, the Fremont County SCD, SCS, Forest Service, and other Federal, State, and private agencies.

There are an unusual number of organizations involved because of the complex mixture of private lands and public lands managed by various government agencies. In keeping with the extra spirit of cooperation necessary to solve problems on such a watershed, the Forest Service provided land for one of the plots and fenced it.

Schroeder says if government agencies and private landowners in this watershed are going to attempt to stabilize the upper reaches of the watershed, they need to know what will work best. He says, "Sound range management, especially proper grazing use, is the key to improving conditions. In areas of extreme deterioration, range seeding will be needed to help stabilize the upper watershed."

L. Dean Loukonen,  
range conservationist, SCS, Canon City, Colo.



Tom Knickerbocker, vice-president of the Upper Arkansas Soil Conservation District, drills seed on Badger Creek watershed. He is assisted by Wes Pope, then SCS soil conservationist, Cripple Creek, Colo., and now SCS district conservationist at Flagler, Colo.